

## What to Expect in the [Rainy Season](#) Frequently Asked Questions

May 2014

*In central and south Florida, the wet season is typically mid-May through October when 70 percent of the year's rain falls. Flooding may happen when large amounts of rain occur over a short period of time or from a single, heavy storm, tropical system or hurricane. Even with effective water management systems in place, standing water may still occur during and after extreme events. Residents should heed National Weather Service notifications regarding flash flood watches and warnings.*

### Understanding water drainage in your neighborhood

**Q: Who provides rainfall drainage and flood control for my area?**

**A:** Effective flood control is achieved through an [interconnected drainage system](#):

- Local neighborhood ditches and swales operated by homeowner associations or local governments carry excess stormwater to secondary canals.
- Secondary canals operated by local water control districts, cities or counties connect and carry excess water to the primary canal system.
- Primary (regional) canals and structures operated by the South Florida Water Management District (SFWMD) convey water to storage areas or discharge to the coast.

To function properly, all systems must be kept in good working order. Local water management designs can vary widely from community to community, and some older neighborhoods may have very limited drainage. Even the best system can be overwhelmed at times by extreme downpours.

South Florida's [primary water management system](#) consists of approximately 2,000 miles of canals and 2,800 miles of levees/berms, more than 650 structures and 700 culverts, and nearly 70 pump stations. To protect regional water supplies and alleviate potential flooding throughout the SFWMD's 16-county jurisdiction, weather conditions and water levels are monitored around the clock. In addition to headquarters water control operations in West Palm Beach, trained work crews located at eight field stations ensure year-round system readiness and emergency response when needed.

**Q: What action does the SFWMD take during the rainy season?**

**A: Standard Actions** - In preparation for the rainy summer months, the South Florida Water Management District inspects and maintains its culverts, spillways, pump stations and canal banks to ensure the system is in top operating condition. The Operations Control Center is staffed 24/7 to monitor and remotely operate the primary water management system as water levels change due to rainfall. Historical and real-time data, weather forecasts and actual rainfall amounts are used in determining optimum water levels in the primary flood protection canals.

Before/During Storm Actions - In advance of a specific, forecasted heavy rainfall event (including a tropical storm or hurricane), water levels in canals in the potentially affected area(s) may be temporarily lowered. This action creates short-term capacity within the primary system to accommodate the expected rainfall. When the water level reaches a certain point, structures convey the excess water into storage areas or for release to the coast. A number of factors determine just how low the canals will be drawn down and it can vary from storm to storm.

In addition to the canal level adjustments, field crews are dispatched to conduct inspections and to ensure that adequate fuel supplies for pump stations and other equipment are readily available. During and after a storm, control gates on structures are opened as needed to facilitate flows in the regional canals. District canal gates open from the bottom, so it may not always be obvious when the gate is in operation. Regional water managers also work with local drainage districts and counties to help maximize flows from neighborhood systems into the primary canals where the water is then directed to storage areas or out to the coast.

If conditions warrant activation of the SFWMD's Emergency Operations Center, that action may also trigger operation of a Citizen Information Line. Timely regional water management information is always available on the District's website ([www.sfwmd.gov](http://www.sfwmd.gov)) and through its Twitter feeds (@SFWMD and @SFWMD\_EM).

**Q: Should I be concerned that neighborhood yards, streets and parking lots often flood during and after heavy rains?**

**A:** No. After a heavy rain, water in streets, swales, yards and low-lying areas can be expected. These areas are designed to purposely store and convey water to function as critical components of neighborhood drainage facilities, helping to keep water away from homes and businesses. Floodwaters typically recede quickly. However, during the summer rainy season, especially following heavy rains, water may take longer to subside as the ground is already saturated. As it slowly soaks into the ground, the water is recharging aquifers, which benefits our water supplies.

**Q: Can my community be affected by heavy rainfall in other areas?**

**A:** Yes. Because the local, secondary and primary flood control systems are interconnected, rainfall in communities upstream, downstream or near your community can affect how quickly runoff drains. Even if it doesn't look as if your neighborhood is in danger of flooding, communities upstream or downstream may be experiencing local problems, which could impact the timing of flood relief in your area.

**Q: How long does it take for the standing water to recede?**

**A:** That depends on a variety of influences. Runoff naturally flows slowly across South Florida's almost flat landscape. If the ground is relatively dry, the water may seep into the ground fairly quickly. If the ground is already saturated, it may take longer for water to drain from an area affected by heavy rainfall. Also, if water flow is constricted or blocked at any point along the interconnected flood control conveyance process, it can create a bottleneck and impede water movement and drainage in one or many communities.

Gravity moves most runoff in neighborhoods, although pumps are used in some areas to increase drainage or flowage rates. Homeowner associations and/or special districts are responsible for the operation and upkeep of local and secondary facilities.

**Q: Who is responsible for operating my neighborhood drainage system?**

**A:** Local neighborhood canals, lakes and ponds throughout South Florida are typically maintained by a homeowners association (HOA), a local water control / drainage /improvement district, or a city or county government. If you are a member of an HOA, that should be your first point of contact. To determine if you are within the jurisdiction of a water control or drainage district, check your annual property tax bill to see if one of these special taxing districts is listed there. Otherwise, check with your local city or county government to see if they manage any water control facilities in your community.

**Q: Do I need to report local flooding concerns?**

**A:** Because it is part of the permitted drainage system design, you do not need to contact the SFWMD to report instances of standing water in streets, yards and driveways. Allowing the water to temporarily pond in these areas helps prevent water from entering homes. To report excessive flooding or damaged or blocked water control structures in your area, call your HOA, local drainage district or county. If you have a dire health or safety emergency, call 911 for immediate assistance.

**Q: What should be done to ensure that my neighborhood drainage system is in good condition during the rainy season?**

**A:** To ensure peak performance of drainage systems, property managers and residents should conduct the following inspections and maintenance:

- Grates, pipe openings and connections to culverts should be clear.
- Swales and grassy water storage areas should be within proper specifications for height, length and depth and be free of exotic plants.
- Ditches and canals should have all trash, sediment and dead vegetation removed so flow of water is not obstructed.

**Lake Okeechobee and Water Releases**

**Q: Who is responsible for water releases from Lake Okeechobee?**

**A:** The U.S. Army Corps of Engineers manages [Lake Okeechobee water levels](#) with the goal of balancing flood control, public safety, navigation, water supply and ecological health. The Corps bases operational decisions – whether to retain or release water in the 730-square mile lake – on its regulation schedule and the best available science and data provided by its staff and a variety of partners, including the SFWMD. Rehabilitation of the nearly 80-year-old [Herbert Hoover Dike](#) is a Corps top safety priority. In 2013, the Corps' Jacksonville District completed construction of a cutoff wall in the dike's most vulnerable area, a 21.4-mile section between Port Mayaca and Belle Glade. Work is also underway to replace or remove a series of culverts installed around the lake.

**Q: Why is water sometimes discharged from Lake Okeechobee through the St. Lucie or Caloosahatchee waterways into the estuaries?**

**A:** The U.S. Army Corps of Engineers may need to decrease the probability of the water level rising to an elevation that could threaten the stability of the Herbert Hoover Dike. The lake's water level can rise up to six times faster than water can be discharged. By initially prescribing low-volume releases, the regulation schedule reduces the frequency of larger releases that have greater impact on receiving water bodies. However, if inflows and levels continue to increase, larger releases are required. The Corps continuously monitors the effects of direct rainfall and any releases on the primary waterways (St. Lucie and Caloosahatchee) and the receiving estuaries. The Corps confers with its partner agencies and stakeholders to modify releases to help minimize impacts to waterway communities and coastal waters.

**Q: What is the SFWMD's role in water releases from Lake Okeechobee?**

**A:** To assist the U.S. Army Corps of Engineers in furthering lake management goals, the South Florida Water Management District continues to provide unique scientific expertise and data for assessing the ecological health of Lake Okeechobee and the St. Lucie and Caloosahatchee estuaries and their surrounding ecosystems.

#### Water Storage

**Q: Is anything being done to reduce the amount of water that is delivered into Lake Okeechobee and discharged into the estuaries?**

**A:** The District's [Dispersed Water Management](#) program works with a coalition of other agencies, environmental organizations, ranchers, citrus farmers and researchers to enhance opportunities for storing excess surface water on private and public lands. Retaining water on these lands is one tool to reduce the amount of water that is delivered into Lake Okeechobee and/or discharged to coastal estuaries. Through January 2014, approximately 47,900 acre-feet of water retention and storage has been made available in the greater Everglades system through cooperative agreements, interim lands or environmental services projects. Construction of another 53,000 acre-feet of water retention and storage on public and private lands is nearing completion. In addition, 71,000 acre-feet of storage has been created through other regional public facilities, including reservoirs, restoration projects and stormwater treatment areas. Three pilot projects are also underway to provide vital information on the proposed concept of retaining storm water on fallow citrus properties. To put the water storage issue into perspective, 450,000 acre-feet of storage equates to approximately 1 foot of water off of Lake Okeechobee.

**Q: Can more water be stored in canals to reduce coastal releases from Lake Okeechobee?**

**A:** Canals are designed to convey water and do not effectively store large volumes of water. Raising canal levels alone would not lessen the need for the Corps to make regulatory releases from Lake Okeechobee. Raising water levels in 120 miles of primary canals in the Everglades Agricultural Area by one foot equates to approximately .01 foot of water off of Lake Okeechobee. Holding higher water levels in canals during the rainy season would also make the canals more vulnerable to flooding during heavy rains.

**Q: Can more water be stored in the Everglades (Water Conservation Areas) to reduce releases from Lake Okeechobee?**

**A:** At times, yes. The ability to use the Everglades [Water Conservation Areas](#) (WCAs) for water storage in the rainy season is influenced by several factors: the capacity of the Water Conservation Areas, the quality of the water entering the WCAs and the conveyance capacity of the canals. Water levels in the Water Conservation Areas are managed by the U.S. Army Corps of Engineers in accordance with a regulation schedule that balances flood control, public safety, water supply and ecological health. High water levels within the WCAs can jeopardize the ability to provide flood control and cause environmental damage – including the habitat and viability of endangered and threatened species. Water released from Lake Okeechobee, as well as any diverted rainwater runoff, must be treated by Stormwater Treatment Areas (STAs) to reduce the amount of nutrients in the water before it can be moved into the Everglades. The capacity of area canals also limits the amount of water that can be moved into the Water Conservation Areas.

**Q: Can Stormwater Treatment Areas also be used for water storage?**

**A:** Yes, under certain conditions. [Stormwater Treatment Areas](#) (STAs) play a vital role in protecting and restoring America's Everglades. These large constructed wetlands do provide some water storage, but they are designed for water quality purposes – to remove excess nutrients from runoff. Storing too much water in STAs limits their ability to effectively remove nutrients, such as phosphorus. When phosphorus enters the Everglades ecosystem in excess, plant growth is stimulated, producing an overabundance of undesirable vegetation. The state's [Restoration Strategies](#) for providing cleaner water for the Everglades calls for the construction of new water storage impoundments, known as Flow Equalization Basins, and additional constructed wetlands. Construction is already underway on several project components.

**Q: What are the long-term plans to enhance water storage and treatment options that will benefit Lake Okeechobee and the estuaries?**

**A:** Beyond expanding the [Dispersed Water Management](#) program to create additional shallow water retention on public and private lands, a number of restoration efforts are underway that will also provide improved flexibility and operation of the current water management system. The [Central Everglades Planning Project](#) (CEPP) is part of the long-term solution for moving water south away from the northern coastal estuaries and into the heart of the Everglades and Everglades National Park. CEPP identifies and plans for projects on land already in public ownership, and key features include increasing storage and treatment, improving distribution/conveyance and addressing seepage management. The U.S. Army Corps of Engineers is leading this accelerated planning effort in partnership with the South Florida Water Management District. Congressional authorization is required to move forward with project implementation.

### **Additional Topics**

#### **Q: How much water does my lawn need during the rainy season?**

**A:** Lawns and landscapes typically need to receive only three-quarters to an inch of water each week. This usually means a maximum of two hours of irrigation per week, or a maximum of 15 minutes per irrigation zone for each water application. The lawn may not need to be watered at all if it has rained during the week.

#### **Q: Why does my neighborhood pond or lake have algal blooms during the summer?**

**A:** In warm, calm water with high concentrations of nutrients, algae can grow rapidly and form floating, carpet-like mats on the water's surface. Algal blooms are most common during the summer and early fall when sunlight and high temperatures encourage naturally present algae cells to grow more quickly. Although scientists cannot predict when or where blooms will occur, or how long they will last, the blooms run their course then dissipate naturally.

#### **Q: What causes the fish to die in my neighborhood pond, lake or canal?**

**A:** Lakes, ponds, and canals in residential areas are particularly vulnerable to fish kills. Most fish kills occur when oxygen dissolved in the water drops to levels insufficient for the fish to survive. In warm, calm water with high concentrations of nutrients, oxygen can be depleted by algae blooms. Fish can also become susceptible to viral or bacterial infections when they are stressed by low oxygen levels. Fish kills occur most often in the warmer months from May through September. Very few fish kills result in a total loss of the population. Remaining fish can usually reproduce and quickly restore the population. The Florida Fish and Wildlife Conservation Commission monitors fish kills.